

## Addendum A:

The TMDL developed for the Middle Segment of the Blackwater River was based on the Virginia State Standard for fecal coliform. As detailed in Section 1.2, the fecal coliform standard states that the 30-day, geometric-mean concentration shall not exceed 200 cfu/100 ml. As such, pollutant concentrations were modeled over the entire duration of a representative modeling period, and pollutant loads were adjusted until the standard, reduced by a margin of safety equal to 5%, was met (Figure 5.5). Table AA.1 represents the average annual loads during the modeled period after allocation of pollutant loads. Loads from permitted point sources (WLA) and nonpoint sources (LA) are represented, as are the load associated with the margin of safety (MOS) and the sum of these three loads (TMDL). It is worth noting that the MOS is much less than 5% of the TMDL. This outcome illustrates the inherent difference between concentration, which is the amount of a pollutant (e.g. numbers of fecal coliforms) in a given volume of water, and annual loads, which is the total amount of the pollutant regardless of the volume of water. Additionally, this situation reflects the fact that it would be inappropriate to use annual loads, such as those in Table AA.1, as a target goal for meeting a water quality standard that is based on concentrations.

The Middle Blackwater is fed by the Upper Blackwater, which, in turn, is fed by the North and South Forks of the Blackwater. Because of this relationship, water quality improvement in the Middle Blackwater Stream Segment is dependent not only on loads entering from its immediate drainage, but from upstream sources. In Table AA.1, average annual loads are given for the upstream impairments (i.e. South Fork Blackwater, North Fork Blackwater, and Upper Blackwater), as well as the Middle Blackwater impairment since the TMDLs for each of these impairments is interdependent. Additionally, the average annual loads for the total drainage area including all of these impairments are reported.

**Table AA.1 Average annual loads (cfu/year) modeled after TMDL allocation in the Middle Blackwater River Watershed.**

<b>Impairment</b>	<b>WLA</b>	<b>LA</b>	<b>MOS</b>	<b>TMDL</b>
South Fork <sup>1</sup>	2.80E+09	4.06E+14	2.57E+12	4.09E+14
North Fork	0.00E+00	9.24E+14	2.98E+12	9.27E+14
Upper Blackwater	0.00E+00	2.01E+15	1.51E+12	2.01E+15
Middle Blackwater <sup>2</sup>	9.55E+10	2.74E+15	3.59E+12	2.74E+15
Total	9.83E+10	6.08E+15	1.06E+13	6.09E+15

1 The only point source permitted for fecal control in the South Fork Blackwater drainage is Calloway Elementary School (VPDES # VA0088561).

2 The only discharging point source permitted for fecal control in the Middle Blackwater drainage is Hammock Trailer Park (VPDES # VA0086614). A design flow of 0.0195 mgd at a fecal coliform concentration of 200 cfu/100 mL results in a WLA of 5.4E+10 cfu/year. The Franklin Manor Home for Adults (VPDES # VA 0067555), while not currently discharging, also has a permit for fecal control and is represented as part of the WLA as well. A design flow of 0.015 mgd at a fecal coliform concentration of 200 cfu/100 mL results in a WLA of 4.15E+10 cfu/year. The total WLA for the Middle Blackwater segment is 9.55E+10 cfu/year.

Since the input from the Franklin Manor Home for Adults would be an in-stream contribution of fecal coliform, the impact of the additional WLA is evaluated in comparison to the in-stream wildlife load allocation. Adding the WLA to the TMDL is equivalent to increasing the wildlife load allocation by 0.7%, which will have little, if any, impact on the fecal coliform concentrations.

## Addendum B:

The Middle Blackwater is fed by the Upper Blackwater, which in turn is fed by the North and South Forks of the Blackwater. Because of this relationship, water quality improvement in the Middle Blackwater stream segment is dependent not only on loads entering from its immediate drainage but from upstream sources.

The TMDL developed for the Middle Segment of the Blackwater River was based on the Virginia State Standard for fecal coliform. As detailed in Section 1.2, the fecal coliform standard states that the 30-day geometric-mean concentration shall not exceed 200 cfu/100 ml. As such, pollutant concentrations were modeled over the entire duration of a representative modeling period, and pollutant loads were adjusted until the standard, reduced by a margin of safety equal to 5%, was met (Figure 5.5).

Table BB.1 represents the average annual loads during the modeled period after allocation of pollutant loads. Loads from permitted point sources (WLA) and nonpoint sources (LA) are represented, as are the load associated with the margin of safety (MOS) and the sum of these three loads (TMDL). It is worth noting that the MOS is much less than 5% of the TMDL. This outcome illustrates the inherent difference between concentration, which is the amount of a pollutant (e.g. numbers of fecal coliforms) in a given volume of water, and annual loads, which is the total amount of the pollutant regardless of the volume of water. Additionally, this situation reflects the fact that it would be inappropriate to use annual loads, such as those in Table BB.1, as a target goal for meeting a water quality standard that is based on concentrations.

**Table BB.1 Average annual loads (cfu/year) modeled after TMDL allocation in the Middle Blackwater River Watershed.**

<b>Impairment</b>	<b>WLA <sup>1,2</sup></b>	<b>LA <sup>2</sup></b>	<b>MOS <sup>2</sup></b>	<b>TMDL <sup>2</sup></b>
Middle Blackwater	9.83E+10	2.74E+15	1.07E+13	2.75E+15
Single Family Home	2.76E+09			
<b>Total</b>	<b>10.11E+10</b>	<b>2.74E+15</b>	<b>1.07E+13</b>	<b>2.75E+15</b>

1 The only point source permitted for fecal control in the South Fork Blackwater drainage is Calloway Elementary School (VPDES # VA0088561) with a WLA of 2.80E+09 cfu/year. The only discharging point source permitted for fecal control in the Middle Blackwater drainage is Hammock Trailer Park (VPDES # VA0086614). A design flow of 0.0195 mgd at a fecal coliform concentration of 200 cfu/100 mL results in a WLA of 5.4E+10 cfu/year. The Franklin Manor Home for Adults (VPDES # VA 0067555), while not currently discharging, also has a permit for fecal control and is represented as part of the WLA as well. A design flow of 0.015 mgd at a fecal coliform concentration of 200 cfu/100 mL results in a WLA of 4.15E+10 cfu/year. The total modeled WLA for the Middle Blackwater is 9.83E+10 cfu/year.

2 The WLA, LA, MOS and TMDL include loads from the South Fork Blackwater, North Fork Blackwater, Upper Blackwater and Middle Blackwater drainages.

The model developed for the Middle Segment of the Blackwater River does not include a permitted discharge granted to a single family home in Franklin County under Virginia General Permit No. VAG402007. Representing this discharge at the maximum permitted flow of 1,000 gpd and the maximum permitted concentration of 200 cfu/100mL results in an additional annual load to the Middle Blackwater of 2.76E+9 cfu/year. This discharge is considered insignificant for two reasons: 1) The total annual load from this discharge constitutes < 3% of the WLA and 0.0001% of the TMDL. 2) This revised report includes a new model run during which the fecal coliform load from a much larger discharger was added (Franklin Manor Home, see footnote below). The addition of this 15,000 gpd discharger had no discernible effect on either the loading or the modeled concentrations. While the discharge is too small to impact water quality in the Middle Blackwater River, the appropriate WLA is included in the TMDL as shown in table BB.1.